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U. S. Department of Agriculture

THE YEAR IN PLANT RESEARCH

A radio talk by Dr. W. A. Taylor, Chief, Bureau of Plant Industry, delivered Friday, December 9, 1932, in the Department of Agriculture period, National Farm and Home Hour, broadcast by a network of 48 associate NBC radio stations.

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SALISBURY:

Today in the Farm and Home Hour we present another brief review of the results of research work by an important branch of the Department of Agriculture. Dr. W. A. Taylor, chief of the Bureau of Plant Industry, will review some of the high points in the year's work of the Bureau. It is essentially a research organization. Dr. Taylor, will you explain please, the aim of the research of the Bureau, and the results in some of the important lines of its work last year? Ladies and gentlemen, Dr. Taylor.

TAYLOR:

On behalf of the workers in the Bureau of Plant Industry, I send best wishes to Farm and Home Hour listeners. Most of you living on farms know the aim of the research work of our Bureau. But I do want to emphasize for our city listeners the fact that the aim of scientific research in crop production is not simply to make two blades of grass grow where one grew before.

Plant scientists carry on their work with due regard to the economic dangers that lie in growing more farm products than consumers here and abroad are able to make use of at prices profitable to producers. The basic effort of the Bureau of Plant Industry has been and is to help develop an economically sound and stable American agriculture -- an annual farm output of the right size, character and quality to satisfy the consuming demands of our people and the people of other countries to whom we sell farm products.

One of our contributions to the effort to reach that goal is scientific knowledge that helps to reduce the hazards of crop production. The basis for stabilizing agriculture is reduction, so far as human beings can accomplish it, of the hazards of crop production.

Plant scientists are helping to put agriculture upon that essential basis by making available crop varieties better adapted to conditions in each section of the country. They are reducing the plant disease hazard by breeding disease-resistant varieties of many different crops. They also are attacking plant diseases by finding means of controlling or eliminating them. They are developing improved methods of handling, storing, and transporting farm products, especially the perishables, so as to insure the shippers and canners against heavy losses due to spoilage, and to furnish the consumer with products of superior quality.

In fact, improvement of quality as well as greater yields per acre without increasing production cost are twin objectives of plant research. With costs of labor and material held constant or lowered, improvement in quality means ultimate

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better return per bushel or pound produced; improvement in yield per acre means lower cost per bushel or pound produced.

In their work of the year, plant scientists have touched many phases of plant culture. Some experimented with citrus handling in Florida while others were working toward improved methods of frozen pack fruit preservation in the Pacific Northwest. Different groups of men were working simultaneously on potato breeding projects in Maine and on cultural practices for the new date growing industry in the hot valleys of the Southwest. Some of our men were seeking for fuller knowledge of the eelworms or nematodes which damage sugar beets, clover, alfalfa, and a wide range of field and orchard crops. Wheat men have bred a better quality of hard red winter wheat for Kansas growers while plant disease specialists studied the destructive root rot of cotton and other crops in Texas. Plant disease fighters also continued to eradicate the common barberry in 13 of the winter and spring wheat states of the Ohio and Upper Mississippi Valleys in order to control black stem rust of wheat. Others combatted the inroads of the blister rust disease upon stands of white pine timber in New England, the Great Lakes region, and the Inland Empire of the Pacific Northwest. In the fight on blister rust the method is to remove from the woods and gardens plants of the currant and gooseberry species which are the intermediate hosts through which the disease spreads from pine to pine.

I shall not prolong this list of the work carried on, for I want to tell you about the important results coming from some of the projects.

In Florida our scientists worked out a new system of coloring citrus fruits. Florida citrus growers, you know, have come to look upon the coloring of the fruits as a necessary feature of preparing the ripe fruit for packing and shipment. They have been using the so-called "shot" system of applying ethylene gas in special coloring rooms. That method was far superior to previous methods. Now comes the "trickle" system developed last year by our scientists and already it is being rapidly adopted by the Florida citrus industry.

Another research result of interest to the fruit and vegetable industries concerns the use of the chemical, carbon dioxide, as a substitute for pre-cooling in the temporary storage of fruits and vegetables. Our scientists have made extensive tests with both gaseous and solid carbon dioxide. They find that an atmosphere relatively high in this gas makes an effective substitute for pre-cooling, especially in temporary storage of pears and grapes.

Our Bureau and the Georgia State Board of Entomology continued their campaign for the eradication of the phony disease of the peach. Last year 16 million trees were inspected and more than 111 thousand of them, found to be infected, were removed. Most of the diseased trees found were in Georgia and Alabama. But scattered cases of the disease were found as far west as Texas and as far north as Missouri and Illinois. This emphasizes the need for continued vigilance and prompt action against the phony peach disease. In Georgia where the disease first appeared it has been necessary to remove whole orchards of 25 to 50 thousand trees in the course of the eradication campaign.

On behalf of the Bureau and several Corn Belt State experiment stations I am glad to say that improved strains of corn resulting from a long-time research program will soon be available for use by farmers. Five hybrids developed in cooperation with the Iowa Station yielded nearly 10 bushels per acre more in the Iowa corn

yield tests of 1931 than the average of open-pollinated varieties in corresponding districts. The showing of two of the strains of Golden Bantam sweet corn bred for resistance to the bacterial wilt disease were especially gratifying. These two resistant varieties, bred and planted in Indiana, suffered losses of but one per cent from the disease. Non-resistant varieties of sweet corn suffered much more severe losses -- losses ranging from 10 to nearly 85 per cent.

Another very gratifying record of the year was that made by the new varieties of sugar beets which we have bred for resistance to the menacing curly top disease. Under curly top conditions, a new variety now designated United States No. 1 produced 1600 pounds more sugar per acre than the commercial brands of seed used in the localities where we conducted the tests.

Among other new improved varieties of economically important crops that our plant breeders released for introduction during the year were the Brainerd blackberry, and the Bellmar, Southland, and Redheart strawberries, bred by Darrow. Beattie and the other horticulturists who have appeared recently on the Farm and Home Hour program have told you about these varieties. I believe Beattie also told you about the new variety of lettuce, Imperial F, bred by Jagger, that resists two kinds of serious lettuce diseases. Imperial F was grown last year for the first time on a large commercial scale, and the growers agreed that it had the best quality of any variety grown in the summer lettuce sections of California.

Westover, of our forage plants division, has told you during the past three years about some of his expeditions in search of new strains of alfalfa that would be useful in breeding up varieties resistant to the bacterial wilt disease of alfalfa --- a troublesome scourge of this forage crop in Kansas and Nebraska and elsewhere west of the Mississippi. Some of the resistant varieties that the plant breeders have produced from Turkestan alfalfa, by last year had demonstrated their ability to maintain stands for several years in spite of the wilt disease. One resistant variety, Hardistan, was developed in Nebraska, another, the Kaw, in Kansas. Ladak alfalfa also has shown considerable resistance to wilt. On account of its greater productiveness, Ladak is arousing much interest in certain sections where the disease is prevalent.

During the past year, in the enforcement of the Federal Seed Act we examined samples representing more than 10-1/2 million pounds of forage crop seeds offered for entry from foreign countries. Sixteen lots of seeds comprising some 80 thousand pounds were refused admission to the country because of low viability or weed seed content, thus protecting our growers.

Before I take my leave of you Farm and Home listeners, may I say that more than 400 bulletins and articles by members of the Bureau of Plant Industry staff published last year reported the most significant results of the year's research work. Results of other years have been made available to your State extension services and put into publications. Your county agent can furnish information on the practical application of these research results. And I ask that you remember that the aim of research in plant science is to help put our agriculture upon that sound, stable, non-speculative basis which the national welfare as well as the prosperity of the individual farmer requires.

